WHAT IS CLAIMED IS:

1. An isolated polynucleotide comprising a nucleic acid sequence at least 80 % identical to SEQ ID NO: 23, 26 or 29, wherein said nucleic acid sequence is capable of regulating expression of at least one polynucleotide sequence operably linked thereto in trichomes.

2. A nucleic acid construct comprising the isolated polynucleotide of claim 1.

3. The nucleic acid construct of claim 2, wherein the nucleic acid construct further comprising at least one heterologous polynucleotide operably linked to the isolated polynucleotide.

4. The nucleic acid construct of claim 3, wherein the nucleic acid construct further comprises, a nucleic acid sequence encoding a peptide capable of directing transport of a polypeptide fused thereto into a subcellular compartment of a trichome.

5. The nucleic acid construct of claim 4, wherein said nucleic acid sequence is selected from the group consisting of SEQ ID NOs: 59, 61, 63, 65 and 67.

6. The nucleic acid construct of claim 4, wherein said subcellular compartment of a trichome is a leucoplast.

7. A transgenic cell comprising the nucleic acid construct of claim 2.

8. A transgenic plant comprising the nucleic acid construct of claim 2.

9. An isolated polynucleotide comprising a nucleic acid sequence encoding a peptide capable of directing transport of a polypeptide fused thereto into a subcellular compartment of a trichome, wherein said peptide is encoded by the polynucleotide sequence set forth in SEQ ID NO: SEQ ID NOs: 59, 61, 63, 65 and 67.

10. A nucleic acid construct comprising the isolated polynucleotide of claim 9.

11. The nucleic acid construct of claim 10, further comprising an expressible polynucleotide sequence translationally fused to said nucleic acid sequence encoding said peptide.

12. A method of producing a polypeptide of interest in plant trichomes, the method comprising:

(a) expressing the polypeptide of interest in the plant trichomes; and

(b) down-regulating a level of at least one molecule endogenous to the plant trichomes, said at least one molecule being capable of interfering with expression, accumulation or stability of the polypeptide of interest.

13. The method of claim 12, wherein said expressing the polypeptide of interest in the plant trichomes is effected by introducing into the plant trichomes a nucleic acid sequence encoding the polypeptide of interest positioned under a transcriptional control of a promoter functional in the plant trichomes.

14. The method of claim 13, wherein said promoter is as set forth in SEQ ID NO: 23, 26, 29, 35, 38, 39, 42, 48, 50 or 51.

15. The method of claim 13, wherein said nucleic acid sequence encoding the polypeptide of interest further encodes a peptide capable of directing transport of the polypeptide of interest fused thereto into a subcellular compartment of the plant trichomes.

16. The method of claim 15, wherein said subcellular compartment of the plant trichomes is a leucoplast.

17. The method of claim 12, wherein said at least one molecule endogenous to the plant trichomes is an enzyme or a metabolite.

18. The method of claim 17, wherein said metabolite is selected from the group consisting of polyphenols, ketones, terpenoids, phenylpropanoids and alkaloids.

19. The method of claim 17, wherein said enzyme is PPO.

20. The method of claim 17, wherein step (b) is effected by gene silencing.

21. A method of producing a molecule of interest in plant trichomes, the method comprising:

(a) expressing a polypeptide capable of directly or indirectly increasing a level of the molecule of interest in the plant trichomes; and

(b) down-regulating a level of at least one molecule endogenous to the plant trichomes, said at least one molecule being capable of interfering with accumulation or stability of the molecule of interest, thereby producing the molecule in the plant trichomes.

22. The method of claim 21, wherein said polypeptide is endogenously expressed in the plant trichomes.

23. The method of claim 21, wherein said expressing said polypeptide in the plant trichomes is effected by introducing into the plant trichomes a nucleic acid sequence encoding said polypeptide positioned under a transcriptional control of a promoter functional in the plant trichomes.

24. The method of claim 23, wherein said promoter is as set forth in SEQ ID NO: 23, 26, 29, 35, 38, 39, 42, 48, 50 or 51.

25. The method of claim 23, said nucleic acid sequence encoding the polypeptide of interest further encodes a peptide capable of directing transport of said polypeptide fused thereto into a subcellular compartment of the plant trichomes.

26. The method of claim 25, wherein said subcellular compartment of the plant trichomes is a leucoplast.

27. The method of claim 21, wherein said at least one molecule is an enzyme or a metabolite.

28. The method of claim 27, wherein said metabolite is selected from the group consisting of polyphenols, ketones, terpenoids, phenylpropanoids and alkaloids.

29. The method of claim 27, wherein said enzyme is PPO.

30. The method of claim 27, wherein step (b) is effected by gene silencing.

31. A plant genetically modified to express a molecule of interest in trichomes, wherein said plant is further modified or selected capable of accumulating less than 50 % of average volume of undesired compounds in trichome cells of said plant species.

32. The plant of claim 31, wherein at least a portion of cells of the plant are genetically modified to include an expression construct including a polynucleotide sequence of a trichome specific promoter.

33. The plant of claim 32, wherein said expression construct further includes an additional polynucleotide sequence encoding a peptide capable of directing transport of a polypeptide fused thereto into a subcellular compartment of said trichome, whereas said additional polynucleotide is translationally fused to said polynucleotide sequence.

34. The plant of claim 31, wherein at least a portion of cells of the plant are genetically modified to include an expression construct including a first polynucleotide sequence encoding said polypeptide translationally fused to a second polynucleotide sequence encoding a peptide capable of directing transport of a polypeptide fused thereto into a trichome.

35. The plant of claim 31, wherein said expression or accumulation is in a subcellular compartment of trichomes.

36. The plant of claim 35 wherein said subcellular compartment is a leucoplast.

37. The plant of claim 32, wherein said trichome specific promoter is set forth by SEQ ID NO: 23, 26 or 29.

38. The plant of claim 32, wherein said trichome specific promoter is set forth by SEQ ID NO: 23, 26, 29, 35, 38, 39, 42 or 45.

39. The plant of claim 33, wherein said additional polynucleotide sequence is set forth by SEQ ID NO: 59, 61, 63, 65 or 67.

40. The plant of claim 31, wherein said molecule of interest is not a reporter polypeptide.

41. The plant of claim 31, wherein said plant is modified or selected capable of generating a trichome density above 50,000 trichomes/gr leaf tissue.

42. The plant of claim 31, wherein said plant is modified or selected capable of generating a trichome size of 50 % above average size of said plant species.

43. The plant of claim 31, wherein said plant is modified or selected capable of generating leaf surface size at least 25 % above average size of said plant species.

44. The plant of claim 31, wherein said plant is modified or selected capable of generating total leaf number at least 50 % above average leaf number of said plant species.

45. The plant of claim 31, wherein said plant is sterile.

46. The plant of claim 31, wherein said plant is further genetically modified capable of secreting said exogenous polypeptide from trichome cells.

47. A method of harvesting trichomes and/or exudates and/or content thereof, the method comprising:

(a) incubating a trichome-containing plant tissue in a liquid such that trichome exudates and content is released into said liquid, wherein incubating is effected while avoiding friction of said trichome-containing plant tissue with a solid surface; and

(b) collecting said liquid, to thereby harvest the trichome exudates and content.

48. The method of claim 47, wherein said liquid includes an antioxidant.

49. The method of claim 48, wherein said antioxidant is selected from the group consisting of citric acid, ascorbic acid and sodium bisulfite.

50. The method of claim 49, wherein said liquid is water.

51. The method of claim 47, wherein said trichome-containing plant tissue is selected from the group consisting of a shoot, a flower and a leaf.

52. An apparatus for mechanical harvesting of trichome exudates and content, the apparatus comprising a mechanism designed and configured for mechanically aggitating a trichome-containing plant tissue in a fluid and collecting said fluid to containing thetrichome exudates or content.